Mohave County Miner.

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New Smelting Process.

Thomas E. McKenzie, in the El Paso Herald, reports the discovery of a new process for the recovery of copper from its ores invented by a man named Dr. Oliver B. Dawson, of that city. Dr. Dawson made the discovery while carrying on experiments foreign to the recovery of copper, but it is nevertheless a method that has been attempted by many metallurgists throughout the United States and Europe in the years gone by. Some years ago the Shannon copper people tried out a process by which the copper gangue was reduced to molton slag and while in that state precipitated into tanks of cold water, the slag disintegrating and allowing the metal to be recovered by concentration. While it worked fairly well the oxidation of the metal was too great and no method was devised to protect it against the sudden contact with air and water. At the same time the metal was simply matted, which is not the case with the Dawson process. Mr. McKenzie describes the method as follows:

In ordinary smelting the man in charge does not concern himself so much about the copper in the ore. His business is to make a thin slag with the gangue. In his second operation, "converting," he gets a blister, or black copper, which is precisely the same as that produced by the Dawson process in one operation. This is done by going direct for the copper mineral and leaving the barren gangue alone.

Take the case of a 10 per cent copper ore. It does seem more sensible to smelt out the small quantity of copper than to go to the trouble and expense of melting the other 30 per cent as well. The process is conducted in a revolving furnace, somewhat egg shaped, heated by the flame from a crude oil burner.

The ore is first heated, with free admission of air, sufficiently to open up the fracture planes and to prepare the mineral for the next stage, reduction.

Reduction means bringing some substance in contact with the highly heated mineral (oxide of copper) which will rob the oxygen from it, and leaves it in the form of metal.

This is done by throwing into the charge, when it has reached a temperature of 1500 degrees F., a quantity of charcoal equal to 20 pounds to the ton of ore.

The required pressure, which is such an important aid to chemical action, is obtained by the rapid evolution of carbonic oxide gas. As all outlets are closed immediately after the charcoal is put in, a considerable pressure results. The excess of pressure is relieved by suitable valves.

In less than five minutes after the charcoal enters the furnace, reduction of the mineral to metal is complete and the contents are discharged.

As presently arranged, the furnace takes a five ton charge every hour.

Special precautions are taken to prevent reoxidation of the hot metal.

The only thing melted is the metal; the gangue is not affected beyond being made more friable by the heating, and therefore more easily crushed.

We have now a product similar in every respect to the material which the Calumet and Hecla and other companies in the same neighborhood are treating with so much success. It only requires to be finely ground and passed over the ordinary concentrating tables in the usual way, with the certainty of equally good recoveries being made as those well known companies are making.

The costs of the first coarse crushing and reduction process do not exceed 1$ per ton. The subsequent fine grinding and concentration are just the same as in the other processes. One great advantage of this plant is that it is intended for erection at the mine mouth. The only supplies required are 10 gallons of crude oil and 20 pounds of charcoal per ton of ore treated.

Now, take the ordinary mine carrying small percentage of copper, and which there are many in this county, a small plant could be built at the mine and the product shipped to the eastern refineries in bulk or in kegs, as is the custom of the Michigan mines. The cost would be nominal and the costs of handling the bullion would be just the same as that of the smelters. Mohave county has many mines on which a small plant could be placed and operated at large profit. Notably is this the case in the Cedar district and at Mineral Park and Chloride, where there are considerable bodies of ore that will run from four per cent or better and which are highly silicious. These mines could be equipped with one of these plants and pay its way toward development. In El Paso the plant operating successfully has a capacity of 120 tons. A plant of this character might be erected at one of the mines here and tried out. If it is successful it would revolutionize the handling of coppers in this section. The matter is being taken up and an effort made to have either a customs plant erected or one placed upon some of the large copper bodies to note what results may be had.

Oil Flotation.

The following statement was made at the recent annual meeting of the Minerals Separation Co., limited, owning the process and contracting its use on a royalty basis, in London by the chairman of the company: "At the Inspiration Consolidated mines of Arizona, one of the great porphyry properties, our 50-75 ton test plant has yielded recoveries well in the 90 per cent, with low working costs. With the exception of the oxidized capping, every possible class and grade of ore in the mine has been tried, with the same result. From the oxidized capping, also we have proved that we can get better recoveries and better economical results than is possible by any other known method. This problem, however, has been very carefully studied, and I think I am already justified in telling you today that I believe that Minerals Separation has already solved it successfully, and if that is so it will enable us to give as good recoveries from this oxidized material as from the great bulk of the ore in the Inspiration mine, which can be treated so successfully that the mine authorities estimate that by using our process they will make an additional profit of over 1,300,000$ a year more than by any other known method, as well as save 1,500,000$ in the first cost of their treatment plan. These are stupendous figures in themselves, but I am assured that they are even well on the conservative side. The Inspiration company, as you know, has no crushing mill at present except a small testing mill capable of treating about 50 100 tons per day. With that mill they carried out an exhaustive series of tests by all known methods, including our process, with the result that they decided to take a license from us and to install our process. A first section of 600-ton per day crushing plant with flotation unit is now in course of erection; this it is hoped will be ready to start work by September next. Meanwhile, excavations are in progress for a complete mill and flotation plant to treat 7,500 to 8,000 tons per day. The 600-ton section will be ready long before the larger mill can be built, and on its results will depend whether the whole output will be treated by our flotation method. Although the management have adopted this conservative policy, I do not think that either their or our own engineers have the least doubt as to the final result being successful."

One of the large mining properties of Cananea is presided over by Henry S. McKay, who at one time held the Golden Gem, Prince George and C. O. D. mines under bond. Mr. McKay promoted the Lanos d'Oro mines, in western Sonora and the Lluvia d'Oro mines in northern Sinaloa, Mexico. He could have made a large amount of money from these properties, but would not let go when the opportunity presented itself. This property has just come into the limelight of the mining world by the striking of great ore.

Kleinfontein and Tube-Mills.

The annual report of the Kleinfontein mine for the year 1912 contains some interesting features supplied by the consulting engineer on the results of development and the value of the tube-mill as an adjunct to the stamps. It is stated that the stamp and tube-mill combination introduced as an expediency last year has not been such a success as generally supposed for the reduction of costs, which, since the introduction of tube-mills, have increased from 4s. 2d. per ton with stamps only, to 4s. 5d. per ton with stamps and tube-mills combined, while the percentage of extraction has fallen from 95.79 to 94.60. It need hardly have been pointed out that these unsatisfactory results of the introduction of tube-mills are not the rule on the Rand, for generally the costs are lowered and the extraction percentage is increased by the addition of tube-mills. One group by employing 15 stamps only to one tube-mill can handle the same tonnage as that at New Kleinfontein at a shilling per ton less in cost, and moreover are introducing tube-mills so as to attain this proportion with the direct aim of hanging up stamps because they are less efficient and economical than tube-mills. The Barnato group, too, find that the addition of tube-mills last year added considerably to the efficiency of the mill, using stamps solely, as well as to the extraction.—M. & S. Press.

Precipitation of gold on zinc at the Mysore mine, according to H. M. Leslie, was originally accomplished by usiny one-half of the extractor-box capacity for strong solutions, and the other half for weak solutions. It was noticeable, however, in this that the weak-boxes invariably contained as much slime at clean-up as the strong-boxes, but that it was not so rich in gold. To get a more even product, about 11 years ago the alternate use of the boxes was tried, those getting the strong solution one day, getting the weak the next, and vice versa. This proved a decided success, the resulting slime at clean-up being more uniform, and the precipitation equally as affective as before. It was further noticed, that when at any time the tonnage of a plant was reduced, thus giving less gold to precipitate, the bulk of the slime from the extractor-boxes remained much the same, without any improvement in the precipitation being noticeable. This pointed to the possibility that the excess of zinc was more a disadvantage than otherwise. In other words, this excess of zinc acted as what might be called a chemical filter, and precipitated other compounds in the extractor-boxes. This was probably due to the subsidiary reactions set up between the zinc, cyanide, and alkali plus atmospheric oxygen, and the result, taken from a reduction point of view, was undesirable. Working on this basis, experiments were made to reduce the amount of zinc in the boxes, and after trials at the Mysore mine lasting over two years, it was found that from the solution used in treating 10,000 tons of tailing per month, as good precipitation could be obtained by using 37 cu. ft. of space occupied by zinc shaving, as was obtained from the 97 cu. ft. previously considered necessary. This resulted in a great saving of time and material, and instead of four full boxes of clean-up, two partly full were found to be sufficient, at the same time the quality of the slime was greatly improved, and the quantity to be handled much less than it had ever been before. The fineness of the bullion also increased in much the same proportion, varying from 860 to 910 fine gold, with from 45 to 65 of silver per 1000 parts. The quantity of zinc used per ton of sand treated, averages from 0.06 to 0.08 pound.—M. & S. Press.

Inspiration Test Plant is Success.

At the annual meeting of the Minerals Separation Co., Ltd., in London it was reported: At the Inspiration Consolidated Mines of Arizona our 50-75 ton test plant has yielded recoveries well in the 90 per cent, with low working costs. With exception of the oxidized capping, every possible class and grade of ore in the mine has been tried, with the same result.

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The Democrata Rich Strike.

The Democrata Mining company of Cananea made another rich strike in its copper mine, which is located in the heart of the Cananea company holdings. This strike was made on the 200-foot level and may prove to be of great importance to the company. Already over 45 feet of the ore has been penetrated which gives an average of 7.5 per cent copper, besides five ounces of silver. A crosscut, which was started a week ago, has been driven some distance into the ore without any wall being encountered. The face of the drift has still held entirely of ore. The smelter of the company continues operating steadily, one 250-ton furnace being used. The matte is shipped to the Cananea smelter to be converted into bullion. H. S. McKay is the superintendent.—Bisbee Review.

Every mining state in the west today offers an opportunity for a man of moderate capital to take up and develop mining claims. Mining of this class, advantageously located, can be secured on favorable terms. They have been passed by in the rush for big things or have been held at prohibitive prices by the original locator. Many of them have never been located at all because of the local traditions against the finding of ore in that particular locality. Incidentaly a large number of such propositions have been successfully developed in the past few years, and there are more. As the record of these past few years show, a man with a knowledge of the business and a small amount of capital can at this day secure and develop at a good profit mines in available localities.—Mining World.

To Test Electric Furnace In Globe.

Favorable reports have been received of the developements in the Copper Reef mine, situated thirteen miles south of San Carlos. The main crosscut tunnel is now 1400 feet in length and the California drift has been driven 1000 feet and all faces are in ore. The winze sunk from the tunnel level, is down 250 feet and a skip has been installed which will facilitate the hoisting of rock. When this winze reaches a depth of 300 feet a drift will be started. Two shifts are working in the tunnel, drift and winze. A No. 4 Prescott sinker installed in the winze is handling the water with ease.

Owing to the breaking of the compresser engine, work in the mine was suspended for three weeks and resumed last Wednesday night.

The company is hauling fifteen tons of ore to San Carlos for shipment to Globe, to be smelted in an electric furnace which is to be given a test here, and if it proves satisfactory a larger furnace will be installed at San Carlos. The test furnace was shipped from Pittsburg the latter part of June.—Globe Record.

Thos. McAuliff was down from his Cottonwoon Canyon mining camp, in the Reymert district, Wednesday. He etates that Supt. Tyghe is getting things shaped up at the Reymert in good shape for work. The timbers for the new shaft are being framed and there will be a good supply of sets on hand when work begins so that the shaft work, when started, can be pushed with three 8-hour shifts. Experienced American shaft men will be employed in this work and everything will be done in the best up-to-the-minute style.—Florence Blade.

LOST—One diamond ring, Tiffney setting, and one ring with large green set. Lost near County Farm. Finder please return to Mrs. J. C. Goulding and receive reward.